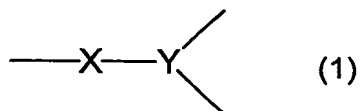


Claims

1. A dendritic polymer having a branching structure including repeating units each having a branch portion, each
5 of said repeating units having a structure represented by formula (1), and containing a linear portion X formed of an optionally substituted divalent organic group and a branch portion Y formed of an optionally substituted trivalent organic group:



10 characterized in that the linear portion X contains at least one thienylene moiety and is at least partially conjugated with the branch portion Y, and in that the polymer reversibly assumes an insulative state and a metallic state, depending on the presence of an external factor.

15 2. A dendritic polymer according to claim 1, wherein the external factor is electricity.

3. A dendritic polymer according to claim 1, wherein the external factor is photoexcitation.

20 4. A dendritic polymer according to any one of claims 1 to 3, containing substantially no doping reagent.

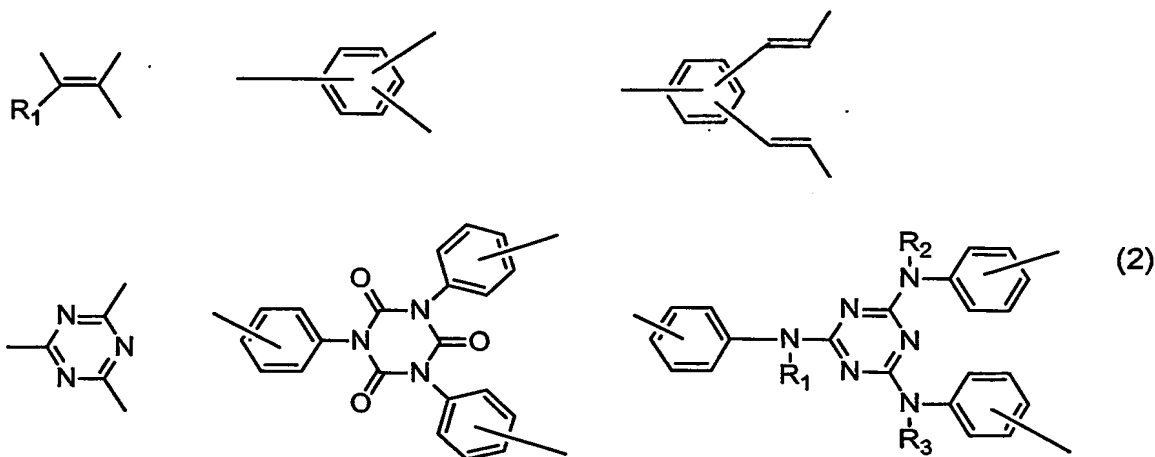
5. A dendritic polymer according to any one of claims 1 to 4, wherein the portion X included in the repeating unit and serving as a starting point of the branching structure is further bonded to a center moiety serving as a core.

6. A dendritic polymer according to claim 5, wherein the core is a group having a valence of at least two to which at least two of the repeating unit can be directly bonded.

7. A dendritic polymer according to any one of claims 1 to 6, wherein the portion Y included in the repeating unit and serving as an end of the branching structure is bonded to end moieties which are different from the repeating unit.

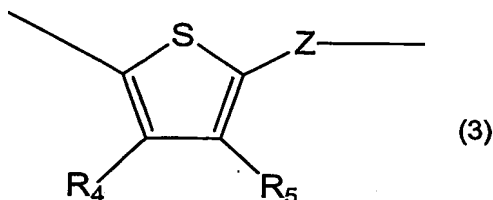
8. A dendritic polymer according to any one of claims 1 to 7, wherein the branch portion Y includes, as a branching center, a chemical entity selected from among chain hydrocarbons (aliphatic hydrocarbons), cyclic hydrocarbons (including alicyclic compounds and aromatic compounds), and heterocyclic compounds (including aromatic heterocyclic compounds and non-aromatic heterocyclic compounds).

9. A dendritic polymer according to claim 8, wherein the branch portion Y is selected from among the moieties represented by formula (2):



wherein each of R_1 , R_2 , and R_3 represents a hydrogen atom or an alkyl group.

10. A dendritic polymer according to any one of claims 1 to 9, wherein the linear portion X is represented by formula (3), and is at least partially conjugated with the branch portion Y:



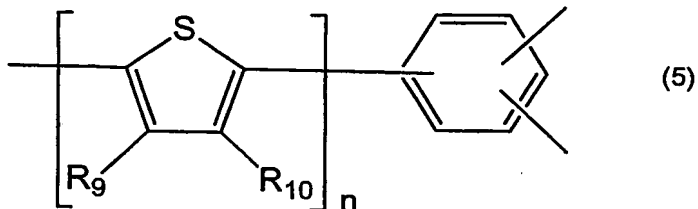
- 5 wherein Z represents a single bond or an optionally substituted divalent organic group which is at least partially conjugated with thienylene; and each of R₄ and R₅ is selected from hydrogen, an alkyl group, and an alkoxy group.
- 10 11. A dendritic polymer according to claim 10, wherein the substituent Z is a substituent formed from a moiety selected from the group consisting of substituted or unsubstituted chain hydrocarbon (aliphatic hydrocarbon) moieties, substituted or unsubstituted cyclic hydrocarbon
- 15 (including alicyclic compound and aromatic compound) moieties, and substituted or unsubstituted heterocyclic compound (including aromatic heterocyclic compound and non-aromatic heterocyclic compound) moieties; a substituent formed from a plurality of same moieties continuously linked together
- 20 selected from said group; or a substituent formed from a plurality of different moieties continuously linked together selected from said group.

12. A dendritic polymer according to claim 11, wherein

wherein A_1 represents O, S, or N- R_8 , and each of R_6 , R_7 , and R_8 represents a hydrogen atom or an alkyl group.

14. A dendritic polymer according to any one of claims 1 to 9, wherein the repeating unit is represented by formula

5 (5):



wherein each of R_9 and R_{10} is selected from hydrogen, an alkyl group, and an alkoxy group, and n represents an integer of 1 to 10.

15 15. A dendritic polymer according to any one of claims 1 to 14, which is a dendrimer.

16. An electronic device element characterized by employing a dendritic polymer as recited in any one claims 1 to 15.

15 17. An electronic device element according to claim 16, which is a charge-transporting device element.

18. An electronic device element according to claim 16, which is a switching transistor element.

19. An electronic device element according to claim 16, which is a light-emitting device element.

20 20. An electronic device element according to claim 16, which is a photoelectric conversion device element.